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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,854	10/29/2003	Masaki Iijima	244632US3	5703

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EXAMINER	
HANDAL, KAITY V	
ART UNIT	**PAPER NUMBER**
1764	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/694,854	IIJIMA ET AL.	
	Examiner	Art Unit	
	Kaity Handal	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-11 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 10/29/03,5/26/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Kobayashi et al. (US 6,486,218 B2).

With respect to claims 1 and 6, Kobayashi teaches a synthetic gas manufacturing plant (apparatus and method) comprising: a reformer (fig. 1, 10) having a reaction tube (11), a combustion radiation unit (12) arranged around the reaction tube (11) to heat the reaction tube (11), and a convection unit (13) communicating with the combustion radiation unit (12); a source gas supply passageway (20_2) to supply a natural gas to the reformer (10); a steam supply passageway (20_3) to supply steam to the source gas supply passageway (20_2); a carbon dioxide recovery apparatus (31) to which a total amount of combustion exhaust gas flowing through the convection unit (13) of the reformer (10) is supplied, and which recovers carbon dioxide from the combustion exhaust gas; a compressor (32) to and compress the recovered carbon dioxide; a return passageway (20_6) to supply part or the whole of

the compressed carbon dioxide from the compressor (32) to the source gas supply passageway.

3. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Iijima et al. (US 6,726,852 B2).

The applied reference has a common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1 and 6, Iijima teaches a synthetic gas manufacturing plant (apparatus and method) comprising: a reformer (fig. 1, 10) having a reaction tube (11), a combustion radiation unit (12) arranged around the reaction tube (11) to heat the reaction tube (11), and a convection unit (13) communicating with the combustion radiation unit (12); a source gas supply passageway (20_2) to supply a natural gas to the reformer (10); a steam supply passageway (20_4) to supply steam to the source gas supply passageway (20_2); a carbon dioxide recovery apparatus (51_1) to which a total amount of combustion exhaust gas flowing through the convection unit (13) of the reformer (10) is supplied, and which recovers carbon dioxide from the combustion exhaust gas; a compressor (S2) to and compress the recovered carbon dioxide; a return passageway (20_6) to supply part or the whole of

the compressed carbon dioxide from the compressor (S2) to the source gas supply passageway.

4. Claims 1 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Seiki et al. (US 6,875,794 B2).

The applied reference has a common inventors and assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

With respect to claims 1 and 6, Seiki teaches a synthetic gas manufacturing plant (apparatus and method) comprising: a reformer (fig. 1, 10) having a reaction tube (11), a combustion radiation unit (12) arranged around the reaction tube (11) to heat the reaction tube (11), and a convection unit (13) communicating with the combustion radiation unit (12); a source gas supply passageway (20_2) to supply a natural gas to the reformer (10); a steam supply passageway (20_3) to supply steam to the source gas supply passageway (20_2); a carbon dioxide recovery apparatus (30) to which a total amount of combustion exhaust gas flowing through the convection unit (13) of the reformer (10) is supplied, and which recovers carbon dioxide from the combustion exhaust gas; a compressor (51) to and compress the recovered carbon dioxide; a return passageway (20_{14}) to supply part or the whole of

the compressed carbon dioxide from the compressor (51) to the source gas supply passageway.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,486,218 B2), as applied to claims 1 and 6 above, and further in view of DePalma (5,575,274).

With respect to claims 2 and 7, Kobayashi discloses all claim limitations as set forth above but fails to show wherein a passageway area varying means is placed in the convection unit, and supplies the total amount combustion exhaust gas flowing in the convection unit to the carbon dioxide recovery apparatus. DePalma teaches a fireplace system having a passageway area varying means/damper (fig. 1, 54) placed in a convection unit/flue (52) (col. 6, lines 6-7), in order to control the total amount combustion exhaust gas flowing in the convection unit/flue (52) (col. 6, lines 20-23) and to vent it safely through the chimney (col. 3, lines 42-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a passageway area varying means in the convection unit of Kobayashi, as taught by DePalma, in order to control the total amount

combustion exhaust gas flowing in the convection unit/flue and to vent it safely through the chimney.

7. Claims 3-5, 8-9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,486,218 B2), as applied to claims 1 and 6, and further in view of Fujii et al. (5,344,627).

With respect to claim 3, Kobayashi discloses all claim limitations as set forth above but fails to show wherein said compressor is driven by a steam turbine. Fujii teaches a system for removing carbon dioxide from a combustion exhaust comprising compressors to compress the carbon dioxide and comprising a steam turbine in order to drive the compressors (col. 4, lines 3-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a steam turbine in Kobayashi's apparatus, as taught by Fujii, in order to drive the compressors.

With respect to claims 4 and 8, Kobayashi further teaches a system comprising a heat exchanger (fig. 1, 51) to generate steam by exchanging heat between a synthetic gas (20_7) synthesized by the reformer (10) and water (20_8) in order to generate high pressure steam (col. 3, lines 49-52) and supply it to the steam turbine of modified Kobayashi.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply high pressure steam generated by exchanging heat

between a synthetic gas synthesized by the reformer and water to the steam turbine of modified Kobayashi.

With respect to claims 5 and 9, Kobayashi further teaches a system comprising a passageway (20_4) for circulating boiler water and cooling the combustion waste gas by exchanging heat with water in the convection unit (13) of the reformer (10) (illustrated in fig. 1) in order to generate high pressure steam (col. 3, lines 21-29) and supply it to the steam turbine of modified Kobayashi.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to exchange heat with water in the convection unit of the reformer in order to generate high pressure steam and supply it to the steam turbine of modified Kobayashi.

With respect to claim 11, Kobayashi teaches wherein the manufactured synthetic gas (20_7) is used in synthesis of methanol (col. 3, lines 38-41).

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. (US 6,486,218 B2), as applied to claim 6, and further in view of O'Rear et al. (US 6,896,707 B2).

With respect to claim 10, Kobayashi discloses all claim limitations as set forth above but fails to show wherein a portion of the compressed carbon dioxide not used as a source gas is supplied into the ground and fixed therein. O'Rear teaches fuel processing wherein carbon dioxide is supplied into the ground in order to reduce carbon dioxide emissions into the atmosphere (col. 11, lines 36-40).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to supply the portion of the compressed carbon dioxide not used as a source gas into the ground in Kobayashi's apparatus, as taught by O'Rear, in order to reduce carbon dioxide emissions into the atmosphere.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KH

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5/4/2006

ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER